

Docket: 204/505 US
Applc. 10/590,180Claims List

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2 1. (Currently Amended) An apparatus for free motion stitching and for
3 inserting stitches of uniform length through a stack of one or more fabric layers as said
4 stack is manually guided in a substantially horizontal plane, said apparatus comprising:

5 a fixedly located stitch head including a needle mounted for cyclic vertical
6 movement;

7 a bed defining a substantially horizontally oriented first planar surface
8 mounted opposite to said stitch head;

9 a frame configured to retain a-said fabric layer stack in a substantially taut
10 condition adjacent to said first planar surface;

11 means at least one bearing supporting said frame for manually guided
12 movement to move said stack across said first planar surface;

13 a detector for producing one or more signals representing the magnitude of
14 translational movement of said frame; and

15 control means-circuitry responsive to said detector signals indicating a
16 magnitude of translational movement exceeding a threshold magnitude for causing said
17 needle to execute a cyclic movement from an up position remote from said stack, to a
18 down position piercing said stack, and back to said up position.

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20 2. (Cancelled)

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22 3. (Currently Amended) The apparatus of claim 2-1 wherein said bearings
23 comprise wheels.

24 4. (Currently Amended) The apparatus of claim 2-1 wherein said bearings
25 comprise slide members.

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KRN318.AMD 605 US

Docket: 204/505 US
Applic.: 10/690,180

1 5. ~~(Currently Amended)~~ The apparatus of claim 2-1 wherein said detector
2 is coupled to said frame for movement therewith.

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4 6. ~~(Original)~~ The apparatus of claim 5 wherein said detector comprises an
5 optical detector responsive to light reflected from said second planar surface.

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7 7. ~~(Currently Amended)~~ The apparatus of claim 2-1 wherein said detector
8 comprises at least one arm linked to said frame for movement therewith and means
9 responsive to movement of said arm for producing said signals.

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28 KRN310.AMD 505 US

Docket: 204/506 US
Appl.: 10/590,180

1 8. (Currently Amended) A method of forming successive stitches of
2 uniform length while free motion stitching through a stack of fabric layers, said method
3 comprising:

4 mounting an actuatable stitch head at a fixed location above a planar
5 surface;

6 mounting a stack of fabric layers to a frame;

7 manually moving said frame to guide said stack across said planar surface;

8 detecting the movement of said frame; and

9 actuating said stitch head in response to a magnitude of frame movement
10 greater than a threshold magnitude to cause a needle in said stitch head to move from an
11 up position remote from said stack, to a down position piercing said stack, and back to
12 said up position

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14 9. (Original) The method of claim 8 wherein stitch head is actuated at a rate
15 proportional to the rate of translational movement of said frame.

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28 KRN316.AMD 505 US

Docket 204/505 US
Applic. 10/590,180

1 10. (Currently Amended) A method of forming successive stitches of
2 uniform length while free motion stitching through a stack of fabric layers, said method
3 comprising:
4 mounting an actuatable stitch head at a fixed location above a planar
5 surface;
6 mounting a stack of fabric layers to a frame;
7 manually moving said frame to guide said stack across said planar surface;
8 detecting the movement of said frame; and
9 controlling said stitch head to cause a needle to execute cyclic movements
10 at a rate proportional to the speed of movement of said frame.

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28 KRN318,AMD 505 US

Docket: 204/505 US
Applc. 10/590,180

11. (Currently Amended) An apparatus for free motion stitching and for
2 inserting stitches of uniform length through a stack of one or more fabric layers as said
3 stack is manually guided in a substantially horizontal plane, said apparatus comprising:
4 a fixedly located stitch head including a needle mounted for cyclic vertical
5 movement;
6 a bed defining a substantially horizontally oriented first planar surface
7 mounted opposite to said stitch head;
8 a frame configured to retain a said fabric layer stack in a substantially taut
9 condition adjacent to said first planar surface;
10 means at least one bearing supporting said frame for manually guided
11 movement across a substantially horizontally oriented second planar surface to move said
12 stack across said first planar surface;
13 a detector for measuring the movement of said frame across said second
14 planar surface; and
15 control means circuitry for causing said needle to execute cyclic movements
16 at a rate substantially proportional to the rate of frame movement measured by said
17 detector.

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28 KRN316.AMD 505 US

Docket: 204/505 US
Applc.: 10/590,160

1 12. (Original) Apparatus for use in combination with a sewing machine which
2 includes a drive subsystem configured to cycle a needle through a path of vertical
3 movement from an up position to a down position and back to said up position, said
4 apparatus comprising:

5 a frame;

6 means for removably securing a stack of one or more fabric layers to said
7 frame;

8 bearing means mounting said frame for hand guided movement across a
9 planar surface;

10 detector means for producing signals representing the magnitude of
11 translational movement of said frame across said planar surface; and

12 means for coupling said signals to said drive subsystem to synchronize the
13 cycle rate of said needle to the translational movement of said frame.

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15 13. (Original) The apparatus of claim 12 wherein said bearing means
16 comprises at least one wheel.

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18 14. (Original) The apparatus of claim 12 wherein said detector means
19 produces signals representing the magnitude of frame translation along first and second
20 perpendicular directions.

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28 KRN310.AMD 505 US

Docket: 204/505 US
Applc.: 10/590,180

1 15. (Original) The apparatus of claim 12 wherein
2 said means for coupling is adapted to apply said signals to said drive
3 subsystem to initiate a needle cycle in response to frame translation exceeding a
4 threshold magnitude.

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6 16. (Original) The apparatus of claim 12 wherein said drive subsystem
7 includes speed control circuitry; and wherein
8 said means for coupling is adapted to apply said signals to said speed
9 control circuitry.

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KRN316.AMD 505 US